

CLAIMS

Sub 1
 2 A method for recovering data transmitted on a physical channel,
 wherein a channelization code used for the physical channel is not known at
 the time of the data recovery, the method comprising:

4 receiving and processing a modulated signal to provide received
 samples;

6 selecting a hypothesized channelization code for processing the physical
 channel;

8 processing the received samples with the hypothesized channelization
 code to generate partially processed symbols;

10 storing intermediate results representative of the partially processed
 symbols;

12 determining an actual channelization code used for the physical channel;
 and

14 processing the intermediate results in accordance with the actual
 channelization code and the hypothesized channelization code to provide final
 16 results.

2. The method of claim 1, further comprising:

2 selectively combining the final results from multiple symbol periods to
 obtain a recovered symbol, wherein each symbol period corresponds to
 4 duration of the actual channelization code.

3. The method of claim 2, wherein the selectively combining is
 2 performed in a manner complementary to an encoding performed in
 accordance with a space time block coding transmit antenna diversity (STTD)
 4 mode defined by W-CDMA standard.

4. The method of claim 1, wherein the processing the received samples
 2 includes

decovering the received samples with the hypothesized channelization
 4 code to generate decoupled symbols, and

demodulating the decoupled symbols with pilot estimates to generate
 6 the partially processed symbols.

5. The method of claim 4, wherein the demodulating with the pilot
 2 estimates includes

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performing a dot product between the discovered symbols and the pilot
4 estimates, and

performing a cross product between the discovered symbols and the
6 pilot estimates, and

wherein the partially processed symbols are derived based on results of
8 the dot and cross products.

6. The method of claim 1, further comprising:

2 combining partially processed symbols from a plurality of demodulation
elements assigned to process the physical channel to generate the intermediate
4 results.

7. The method of claim 1, wherein the processing the intermediate
2 results includes

partitioning the intermediate results into sets of intermediate results,
4 scaling each intermediate result in a particular set with a respective
scaling factor determined by the actual channelization code and the
6 hypothesized channelization code, and

combining the scaled results for each set to obtain a final result for the
8 set.

8. The method of claim 7, wherein the scaling factor is either +1 or -1.

9. The method of claim 1, wherein the hypothesized channelization code
2 is a member of a set of channelization codes that may be used to generate the
actual channelization code, and wherein the hypothesized channelization code
4 has a length that is shorter or equal to that of the actual channelization code.

10. The method of claim 9, wherein the hypothesized channelization
2 code can be used to generate all channelization codes in the set.

11. The method of claim 9, wherein the hypothesized channelization
2 code is an orthogonal variable spreading factor (OVSF) code.

12. The method of claim 11, wherein the hypothesized OVSV code has a
2 largest spreading factor among the channelization codes in the set.

13. The method of claim 11, wherein the hypothesized OVSF code has a spreading factor of four or greater.

14. The method of claim 11, wherein the hypothesized OVSF code and the actual OVSF code each has a spreading factor ranging from four to 512.

15. The method of claim 4, wherein the pilot estimates are generated by despreading the received samples with a pilot despreading code, and integrating the despread pilot samples over a length of the pilot despreading code to obtain the pilot symbols that are then used to generate the pilot estimates.

16. The method of claim 15, wherein the pilot estimates are generated by interpolating or extrapolating the pilot symbols.

17. The method of claim 1, wherein the physical channel has a variable data rate.

18. A method for recovering data transmitted on a physical channel, wherein at least one characteristic of the data transmission is not known at the time of the data recovering, the method comprising:

- receiving and processing a modulated signal to provide received samples;
- determining a hypothesized parameter value corresponding to an unknown characteristic of the data transmission;
- processing the received samples with the hypothesized parameter value to generate intermediate results;
- storing the intermediate results;
- determining an actual parameter value for the unknown characteristic;

and

further processing the intermediate results using the actual parameter value and the hypothesized parameter value to provide final results.

19. The method of claim 18, wherein the hypothesized parameter value corresponds to a channelization code used to channelize the data.

20. A receiver unit operative to process a physical channel in a CDMA communications system, comprising:

4 a receiver operative to receive a modulated signal and provide received samples indicative of data transmitted on the physical channel;

6 at least one demodulator element coupled to the receiver, each demodulator element including

8 a data processing unit operative to receive and process the received samples in accordance with a hypothesized channelization code to provide discovered symbols;

10 a memory unit operative to store intermediate results representative of the discovered symbols from the at least one demodulator element; and

12 a processor operative to receive and process the intermediate results in accordance with an actual channelization code and the hypothesized channelization code to generate final results.

2 21. The receiver unit of claim 20, wherein each demodulator element further includes

4 a pilot processing unit operative to receive and process the received samples to generate pilot estimates, and

6 a data recovery element coupled to the pilot processor and the data processing unit, the data recovery element operative to receive the pilot estimates and the discovered symbols and generate the partially processed symbols.

2 22. The receiver unit of claim 21, wherein the data recovery element is operative to receive and demodulate the discovered symbols with the pilot estimates to generate the partially processed symbols.

2 23. The receiver unit of claim 22, further comprising:

4 a combiner coupled to the at least one demodulator element and operative to receive and combine partially processed symbols from one or more assigned demodulator elements to generate the intermediate results.

2 24. A receiver unit operative to process a physical channel in a CDMA communications system, comprising:

4 a receiver operative to receive a modulated signal and provide received samples indicative of data transmitted on the physical channel;

6 a plurality of demodulator elements coupled to the receiver, each demodulator element operative to receive and demodulate the received samples with a particular set of parameters to provide respective partially

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